

WHAT IS CLAIMED IS:

1. A method for producing a combinatorial library of fluorescent dyes comprising reacting an aldehyde with a 2- or 4-methyl pyridinium salt.

2. The method according to claim 1 wherein the reaction occurs in the presence of a secondary amine catalyst.

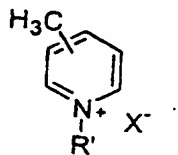
3. The method according to claim 1 wherein the reaction occurs in the presence of exogenous heat energy.

4. The method according to claim 3 wherein the exogenous heat energy is microwave energy.

5. The method according to claim 1 wherein the reaction occurs in a polar solvent.

6. The method according to claim 1 wherein the aldehyde has the formula R-CHO, wherein R is selected from the group consisting of substituted or unsubstituted alkyl, alkenyl, alkynyl, aryl, alkaryl, heterocyclic, cyclic, and fused aryl compounds.

7. The method according to claim 1 wherein the pyridinium salt has the formula

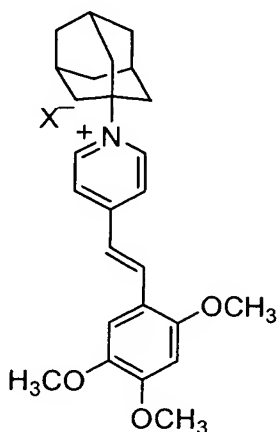


wherein R^1 is selected from the group consisting of R which is selected from the group consisting of substituted or unsubstituted alkyl, akenyl, alkynyl, aryl, alkaryl, heterocyclic, cyclic, and fused aryl compounds.

8. A method for detecting an organelle comprising incubating cells in the presence of a compound from the combinatorial library according to claim 1 and detecting florescence emissions.

9. The method according to claim 8 wherein the organelle is selected from the group consisting of nuclear organelles, mitochondrial organelles, cytosolic organelles, vesicular organelles, granular organelles, and reticular organelles.

10. The Fluorescence compounds of the following formula:



wherein X is selected from the group consisting of Cl, Br, I, cyanide, cyanate, thiocyanate, selenocyanate, trifluoromethyl, and azide.

11. A method of detecting DNA and RNA comprising incubating cells in the presence of a compound according to claim 10 and detecting fluorescence emissions.